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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,689	12/17/2001	Eugene A. Fitzgerald	ASC-023DVC1	5381

7590 10/31/2003

Patent Administrator  
Testa, Hurwitz & Thibault, LLP  
High Street Tower  
125 High Street  
Boston, MA 02110

EXAMINER

SCHILLINGER, LAURA M

ART UNIT PAPER NUMBER

2813

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/022,689

Applicant(s)

FITZGERALD, EUGENE A.

Examiner

Laura M Schillinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 35,39,40,44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 45 is/are allowed.
- 6) ☒ Claim(s) 35, 39-40, 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

**This Office Action is in response to Amendment D, in Paper No.15, dated 8/11/03.**

#### *Allowable Subject Matter*

Claim 45 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Ismail teaches forming a graded SiGe layer (30) under compressive strain and then later teaches to form a relaxed layer 40 upon it. Ismail teaches that this results in a strain at the interface of the two layers resulting in a valence jump (Col.6, lines: 40-50), therefore there is a reduction of relaxation. However, Ismail fails to teach the combination of claimed limitations required by claim 45, where the **graded compressed SiGe** layer experiences a reduction in **compressive strain** as a result of a **second tensile strained layer**. Other related prior art teaches a reduction in compressive strain for **AlGaIn layers** as a result of a second tensile strained layer, however prior art fails to teach nor suggest this reduction for SiGe layers. Consequently, claim 45 contains allowable subject matter.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Ismail et al ('713).

In reference to claim 35, Ismail et al a method comprising:

Providing a semiconductor substrate (Fig.2 (20)); and

Providing on the substrate a graded region incorporating a first strain (Fig.2 (30) and Col.6. lines: 35-40); and

Processing the graded region so as to introduce a second type of strain, the previously incorporated first type strain reducing the processed induced second type of strain(Col.6, lines: 20-30-layer 40).

In reference to claim 39, Ismail teaches wherein the graded region comprises Si and Ge graded to an increasing concentration of Ge (Col.6. lines: 35-40), and the step of incorporating compressive strain comprises decreasing a temperature at which the graded region is grown as the Ge concentration increases in the graded region (Col.6, lines: 40-55) .

In reference to claim 40, Ismail teaches wherein incorporating compressive strain comprises growing alloys of GeSi at 35-100%(Col.6, lines: 25-35).

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In reference to claim 41, Ismail teaches planarizing at least one surface (Col.4, lines: 45-50).

In reference to claim 44, Ismail teaches planarizing at least one surface (Col.4, lines: 45-50).

### ***Response to Arguments***

Applicant's arguments filed 8/19/03 have been fully considered but they are not persuasive.

Applicant argues that Ismail fails to teach that layer 40 is graded- however the Examiner's rejection refers to layer 30 as the graded layer and as the Examiner's rejection has already stated Col.6, lines: 35-40 teach that layer 30 is graded.

The Applicant next argues that layer 40 is relaxed and not strained as claimed, however if Applicant refers to the Examiner's rejection it is clear that layer 30 is compressively strained.

Applicant argues that processing should not include growing however such an argument is not persuasive because processing is a broad enough term to encompass "growing".

Applicant's last argument is not considered persuasive because as the Examiner explains above the graded layer is layer 30, not 40 as Applicant infers.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (703) 308-6425. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead, Jr. can be reached on (703) 308-4940. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

LMS

October 28, 2003

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800